

Field absolute gravity and GNSS measurements in JARE59

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Absolute gravity measurements and GNSS measurements were carried out at six sites (Langhovde, Akarui-Misaki, Skallen, Rundvågshetta, Botnuten and Mt. Riiser-Larsen) on outcrop rock areas in east Antarctica in the 59th Japanese Antarctic Research Expedition (JARE59) to detect gravity and height changes associated with Glacial Isostatic Adjustment (GIA). These absolute gravity measurements can also contribute to densification of absolute gravity network in Antarctica.

The gravity measurement at each field site was conducted using an absolute gravimeter A10 (SN: #017) with several batteries for the electric power supply. GNSS measurement was also carried out for more than 24 hours on an outcrop rock near the gravity measurement site. At the end of field measurements, we also conducted simultaneous absolute gravity measurements at absolute gravity measurement site in Syowa Station by using two absolute gravimeters FG-5 (#210) and the A10 (SN: #017) to verify the measurement accuracy.

Absolute gravity value of $982535584.2 \pm 0.7 \mu\text{gal}$ (10^{-8} m/sec^2) had already been obtained at Langhovde in 2012 (Doi et al. 2013, Kazama et al. 2013). Almost the same gravity value of $9825535583.29 \pm 0.4 \mu\text{gal}$ is obtained at the same site in this measurement with elevation change of +1.7 cm.

In the presentation, we show the details of the measurements and the measured gravity values. In addition, since GNSS measurements have been carried out several times at Langhovde, Skallen, Rundvågshetta and Mt. Riiser-Larsen, we intend to compare the obtained gravity and height changes with the expected changes estimated from GIA models.

References

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